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THE IMPORTANCE AND POSSIBILITIES OF LOCAL GEOGRAPHY IN ELEMENTARY SCHOOLS

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WHENEVER a subject claims a just place in our courses of study it does so or should do so on the plea of utility for the child's social welfare. With a just social claim for a subject, then, child development lays a greater claim that the teaching shall conform to the laws of child growth. From birth until the child enters school he has utilized the experiences from his immediate outer world to teach him. He comes to be very conversant of his environment. It is a part of himself. He talks about it, asks questions about it, imitates the things in it. He is activity personified. This activity is easily carried over into school life if the teacher encourages it rather than curbs it. The child's fund of knowledge in the primary grades deals with the activities of the people of his neighborhood in response to their environment. We have here the best illustration of the simple fundamental principle in the study of geography, viz.—Man in his various social relations. Local geography, then, is not only the natural starting point in the work, it is the only starting point with the child. The more keenly the teacher in the elementary school recognizes this the more satisfactory will be her work, the more wholesome the response and growth of the children committed to her charge.

APPLIES TO ALL LOCALITIES

Local geography as the starting point applies to all localities, whether the teacher's school is located in the country or city. A teacher's first duty in beginning local geography work is to ascertain with the children and by personal observations and investigations of the locality just what she may make her point of contact. Should her school be in a farming community the children will know most about farm life. Here is her point of contact. Here is her opportunity. The children will talk about horses, cows, poultry, milk, eggs, butter, hay, corn, oats, wheat, marketing, etc. Better still they know about them as a part of the family and community activities. On the other hand, should her school be in a manu-

facturing center the children will know about the life of a factory region. They will reflect the home life of that region. Their conversations will tell of the mill where father works, of the dam for water power, of the raw material and of the finished product. With enthusiasm, they will tell of the engines and freight cars, of trucking and of mill machinery. Many other illustrations of varying localities might be given in a similar way. The fundamental thing for the teacher is to make the children's experiences and the community's activities her point of contact and not an organized course intended to fit all cases.

WEALTH OF LOCAL MATERIAL

Personal interest in local geography brings a wealth of valuable material to the teacher's assistance. She may easily find maps of her town and school region in either advertising material, railroad folders, or county or state atlases. The newspapers, magazines and railroad booklets are invaluable in her local work. By canvassing the locality through the children much moterial can always be obtained from the homes. Parents are always glad to loan material for school use. A dearth of material for local work usually comes from the teacher trying to adapt her local geography to a set form rather than from a readjustment of her own work to fit the particular locality.

TEXT BOOKS

So many teachers say, "None of the text books are adapted to my locality." Of course they are not nor can they be to any great extent. Full treatment of all localities would make books too voluminous and commercially unprofitable. The best any text book can do in the treatment of local geography is to offer a well illustrated suggestive plan. From this the teacher may, through her own initiative, evolve work for her own locality using the text books at hand to supplement her material. She in reality makes her own local text. From her local material she makes the maps necessary, selects those pictures and descriptive matter best suited to her use. To these she adds the historical and biographical phases of geography which have contributed to the past and present day conditions of the local region.

WORK OF MAP EDITING

This is one of the most essential features in connection with the local geography work:

First—Because it makes use of motor expression, through the hand, so vital in mind training.

Second—It makes use of objective map symbols, teaching the children how to read them, thus making the transition to wall and book maps both

natural and easy. This work may easily be begun in a third grade, sometimes earlier.

The starting point for this work is in the home region. As a preparation it is well to teach the cardinal points if not already known.

With the school building as the starting point assist children to model their school district in sand; next make a large drawing of the district on the school-room floor endeavoring to have the streets of the district retain their correct relative positions to the school building. Put in the north-south arrow thereby establishing cardinal directions and anticipating later work with wall maps. Let each child add his own home in the form of a small square on the proper street. Children then delight in telling and showing how to go to one another's homes. To this map may easily be added rivers for the drainage and other things in the community like the library, churches, post office, railroad lines, depot, etc. Each locality will determine what is best to put in.

The next step is to make a simple community map true to scale on a paper about three feet square; place it on the floor of the school-room with its north and south arrow truthfully located and pointing due north. This map may be used to make the transition to a wall map by hanging it on a wall of the school-room with north toward the top of the map. South at the bottom, east at the right and west at the left should be evolved and drilled on at this point—establishing in general, the cardinal directions in most maps.

After this work the teacher may put a large outline map of the town on the board, true to a scale and directions. In this with the school as the starting point may be put the main highways used by the community and outsiders as avenues outward and inward. Surrounding towns may be added, thus building up a larger area. From this plan on a reduced scale may be built up county and state maps always simple in outline and free from too many details in map content. Here may be brought in the fact that towns and cities are represented by dots on the wall and geography maps, because there would not be room on these maps to represent roads, houses, stores, churches, etc. In the studying of towns represented on the maps the children should always be led to think of them in terms of communities with active people instead of meaningless black dots.

Simple hectograph maps in outline may be made of the town or community region. These the children can use individually for editing the school district and community activities. Other simple outline maps of the county and state may be used to show the avenues outward from the community and the location of cities and transportation lines in reference to topography. The lines of work should follow those steps which a child of the community must use in developing a larger horizon.

DISSECTED MAPS

It is a very easy matter to paste a good-sized county map, with outlines of the towns, on stiff cardboard and then cut around the boundary lines of the towns. Children enjoy very much assembling and dissecting such maps, telling some interesting geographical facts about the towns at such times. Boys with jig saws will often make these maps from wood for teachers.

MAP DRAWING

Simple maps of a locality may easily be drawn free hand by the children either on the blackboard or on paper or both. This work should always be anticipated by directed work on the part of the teacher in studying an accurate large map of the region very simple in outline. Following this work the children's drawing should be quickly and boldly done, corrections of errors made, then more drawing, until a map can be drawn of good proportions in one minute or less. This trains the eye and hand in functional accuracy for this kind of work. These maps may be used in a variety of ways for editing and drill work. When well done children prize them for they reflect the truth of their own handiwork.

INDUSTRIAL CHARTS AND CABINETS

Nothing adds to the interest of local work like the collection and arrangement of material brought in. This may be participated in by all willing to lend a hand. People of a locality are always glad to respond to children's and teachers' requests to help in school matters. The natural method to follow in a locality is to draw upon those things it furnishes; if rural then collect rural products; if industrial then mill products; if transportational then railroad products.

To preserve and use with facility, collected material of permanent value should be mounted on cardboards as charts and labeled; if bulky or heavy then arranged and labeled in cabinets. The plan of arrangement should show steps from the raw material to the finished product e. g. if a chart of cotton cloth manufacturing is to be made the steps should be shown from the raw cotton, through the combing, spinning, and weaving processes. Manufacturing establishments are usually glad to prepare charts of their work for school uses. Teachers should encourage the children to make individual charts accompanied by illustrated descriptive matter.

TRIPS

Accompanying all local geography work there should be trip geography. Most regions will furnish many geographical phenomena better taught out of doors than in the school-room. This is feasible and possible in teaching about geographicl objects like hills, mountains, valleys, rivers,

lakes, ponds, etc., also facts about divides, drainage, and river systems. Facts may be observed with reference to the obliqueness of the sun's rays in winter and summer, the lengths of shadows of objects at mid-day in comparison with other parts of the day. Daily and seasonal changes may be connected with this work. Often teachers accompany their classes to places of special interest in the immediate or nearby communities. Among things observed may be construction of new buildings, street and sewer work. Visits to the post office, hose house, library or store are advisable. Most communities have some manufacturing establishments which it is always wise to visit. In all out door work it is well for the teacher to go over the ground before the class trip. This kind of work ought to open the eyes of the children as no other work can to social, industrial and geographical interrelationship.

WRITTEN WORK

To ensure educational growth work in local geography should not stop with oral expression but must serve as one of the mediums of facility and accuracy in written work. This written work should partake of the child himself. It should express what he sees. He should be encouraged to write as freely as he talks. Much of this written work may be illustrated by drawings or maps. Very often good pictures may be obtained and used to illustrate a written paper. Excellent booklets may be made in connection with topics in local geography and artistic covers with carefully illustrated content may show marked individual power.

FOUNDATION FOR SUBSEQUENT WORK

By pursuing a plan of local work similar to the one here outlined a teacher lays the best foundation possible for her own subsequent work in geography or for the teacher in the next grade.

As the work passes out into a large area as the state, group of states or United States as the case may be the children understand better the maps they see, the reasons towns and cities have grown up where they have and are engaged in the kinds of work that they are. Locations of railroads and highways will be interpreted in cause-effect elements. All descriptive matter and pictures will be better understood because of an experience background. Children will come to think in terms of people instead of in terms of meaningless symbols. The transition to the world geography of other people becomes a delight to children.

OTHER CLOSELY RELATED WORK

Geography and history are inseparable. In all local work it is well to bring in local history. That part of local history should be selected which is best suited for the children in the elementary schools. Usually the following may be taken up with interest and profit:

First—The primitive inhabitants of the region.

Second—The earliest settlers in the region, their heroism and the courses they followed—probably rivers—in entering the locality.

Third—The development, chartering, and naming of the towns.

Fourth—The earliest industrial life of the region and why?

Fifth—Later and present day industrial life.

Sixth—Biography of past and present day leaders in exploration, settlement, industry, education, politics and religion. Each biography should tell who the man was, what he did, and how he did it.

THE GENERAL CIRCULATION OF THE ATMOSPHERE

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AIR MOVEMENT AND ITS CAUSES.—Wind is air in motion. Were the earth everywhere at the same temperature the air would be practically motionless, but let one small portion be heated more than its surroundings and motion begins. Being heated, the air expands—that is, the molecules push farther apart and since the direction of least resistance is upward, the greatest expansion is up. Air, of course, is not in layers but for the purpose of analysis let us imagine it so arranged. In figure 1 let lines a, b, c, d, e, represent the dividing surfaces between layers, and the dotted

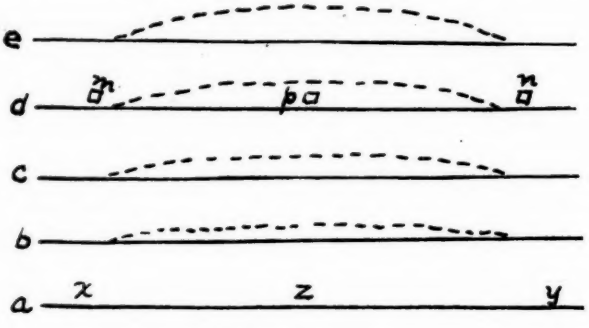

Fig. 1

lines the dividing surfaces after expansion has taken place, calling the dotted lines a', b', c', d', e'. Since a cubic inch of air p is below the surface d', while m and n are above it, p has more air pressing down upon it and it will therefore press outward toward m and n and will tend to move outward. As soon as this movement begins the pressure at z is relieved and that at x and y is increased and the air from x and y will move in toward z, pushing the air at z up. The circulation is now started and will con-

tinue as in fig. 2 so long as the air about z is heated more than that around it.

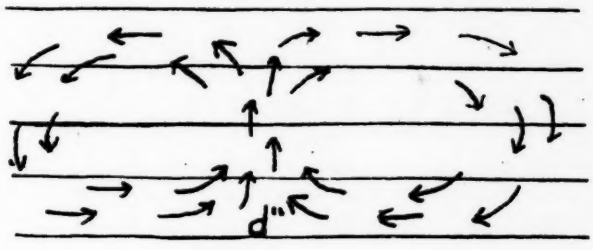

Fig 2

THE MOVEMENT OF AIR ON THE EARTH WITHOUT THE INFLUENCE OF ROTATION

Since the temperature near the equator is higher than that near the poles, the process explained above is continually going on. The air over the equatorial region pushes out to the north and south, relieving the pressure at the equator and increasing it to the north and south. The air near the earth's surface now pushes toward the equator, causing rising currents at that place. The circulation is now established with winds toward the equator in the lower air, upward currents at the equator and winds toward the poles in the upper air.

Since the 30° parallel divides the surface of each hemisphere approximately into halves, there must always be half of the air of the hemisphere on either side of this parallel and some air will begin to rise from the lower atmosphere as soon as it passes 30°, while some will sink from the upper atmosphere as soon as it passes 30° in going toward the poles. Since the meridians, poleward of 30°, approach each other more rapidly than they diverge in the lower latitudes the downward movement would

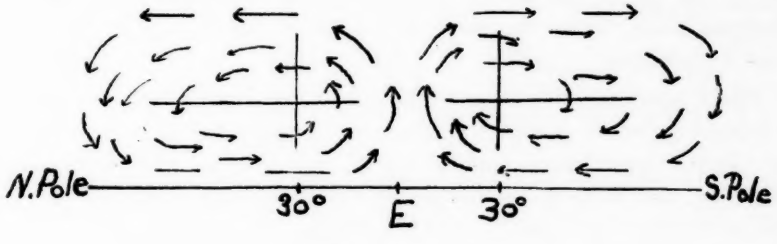

Fig 3

be stronger and more noticeable. Figure 3 illustrates this general hemispherical movement of the air.

Influence of Rotation. Ferrel's Law.—Should a body be started mov-

ing in space in a definite direction, it would keep that direction unless some force from outside itself were brought to bear upon it to cause a change; so air, moving along any meridian near the earth would tend to keep in line with that meridian, if the earth were motionless, but if the earth rotates the meridian changes its direction relative to space while the air tends to keep its direction; the result is that the air moves to the right of the meridian in the northern hemisphere and to the left in the southern. This change may be easily seen by using a globe and a pencil pointed to represent wind direction; it is stated in Ferrel's law as follows: *All freely moving matter on or near the surface of the earth, is deflected, by a force arising from th erotation of the earth, to the right of its course in the northern hemisphere and to the left in the southern.*

The Trade Winds—Northern Hemisphere.—We have already seen that because of differences of temperature between the poles and the equator the lower air moves toward the equator. Beginning, then from 30° latitude to the equator the air should all be moving either south or upward, but because of the deflective force of rotation it is turned to the right of its course and becomes a northeast wind.

Southern Hemisphere.—In the southern hemisphere the wind comes from the south, is turned to the left and becomes a southeast wind. In

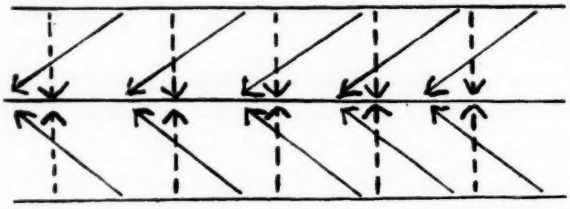

Fig 4

figure 4 the dotted arrows represent the winds directed by temperature differences alone, while the solid arrows show the winds as they are deflected by rotation.

The Upper Air Movement.—As the air approaches the equator, moving toward the west, it begins to rise and in rising keeps its westward motion. In the upper atmosphere as the air moves away from the equator it is deflected, and when it reaches about 30° latitude it is moving due north in the northern hemisphere and due south in the southern, and from that latitude on it is turned to the east and becomes a westerly wind.

The Belt of Westerlier.—As the air approaches the poles it begins to sink, keeping its easterly course till it nears the earth's surface, where it is gradually turned again toward the equator, since it is deflected by rotation. It now becomes what is termed the prevailing westerly wind, not

being turned enough to come from the east till after it has passed latitude 30° and has again joined with the trades.

Several factors tend to keep this air turned toward the east notwithstanding the deflective force of rotation. First: The sinking currents tend to retard its velocity and the less the velocity the less the deflective force. Second: These sinking currents tend to keep the direction of motion of the upper air which is toward the north-east. Third: Since everywhere between the poles and 30° latitude the air is moving toward the east there is a whirl formed with the pole as its center and centrifugal force tends to pile up the air at the outside of the whirl, that is, at 30° latitude, thus causing high pressure at that place. From this belt of high pressure the air flows off to the north and south. That going toward the equator joins the trades, while that going toward the poles strengthens the westerlies since it is deflected from its straight course by rotation and becomes a southwest wind in the northern hemisphere and a northwest wind in the southern.

The Horse Latitudes or Tropical Calms and the Doldrums.—Since there is a belt of high pressure at 30° latitude we find the air pressing down and out. This sinking air forms the calms called the horse latitudes. At the equator the rising air forms the equatorial calms or doldrums.

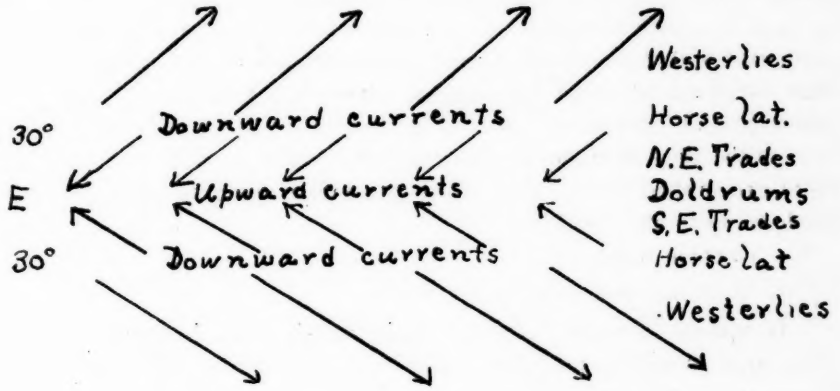

Fig 5

The Ideal Circulation.—The winds of the general circulation, then, are as follows: (1) at the equator the doldrums or calms with rising currents;

(2) from this belt north and south to 30° latitude, the trade winds with their directions northeast in the northern and southeast in the southern hemisphere;

(3) at 30° latitude there are the horse latitudes or tropical calms with sinking air currents;

(4) from the belt of tropical calms toward the poles are the belts of prevailing westerlies with wind from the southwest in the northern hemisphere and from the northwest in the southern;

(5) in the upper air the general direction of winds is southwest in the northern and northwest in the southern hemisphere.

Variations from the Ideal Circulation.

A. Periodical winds

1. Land and water distribution

Since land absorbs heat more easily than water and gives it off more easily after absorption, than water, a land surface in summer is warmer and in winter is colder than a water surface; therefore there is a tendency for air to move from the water to the land in summer and from the land to the water in winter, forming the monsoon winds. The differences in temperature between day and night give the same conditions, resulting in land and sea breezes.

2. Shifting of the heat equator.

As the vertical rays of the sun shift to the north and south of the mathematical equator, the belt of greatest heat follows, causing the doldrum belt to shift also. When the doldrum belt lies to the north of the equator the southeast trades cross into the northern hemisphere, are deflected to the right and become southwest winds. When this belt of greatest heat lies south of the equator the northeast trades similarly cross to the southern hemisphere and are turned to the left, becoming northwest winds. Such variations are most noticeable in places like India where these winds join with and intensify the monsoons.

As the belts of trades are shifted to the north or south, the horse latitudes are pushed out of their ideal position, passing in some places far north or south of latitude 30°.

B. Variable winds

1. Cyclonic and anticyclonic winds

In middle latitudes there is a series of high and low pressure areas, often large enough in horizontal extent to cover a large part of the United States, which are constantly passing to the east, keeping in general the direction of the prevailing winds. In the cyclones or "low" areas, which move on the average about 30 miles an hour, the winds blow in toward the center from all directions, shifted slightly by the rotation of the earth. In the anticyclones or "high" areas the conditions are the opposite, the winds blowing out from the center. In so much as these areas pass over us every few days in middle latitudes giving to each place the winds of the different parts of the area, the winds of the middle latitudes are extremely variable. Large "high" and "low" areas are more or less constant over the large land and water masses, varying their location only with the season. These, however, tend to give periodical changes of winds.

2. Surface features

Where prevailing winds strike mountain ranges they are turned more or less in a direction parallel with the range. The amount they are turned from their course depending somewhat upon their force.

Summary.—The general circulation of the atmosphere, then, comprises the prevailing westerlies, the tropical calms, the trade winds and the equatorial calms with the upper air moving toward the poles. This is interfered with by (1) land and water distribution; (2) the shifting of the region of greatest heat; (3) the cyclonic and anticyclonic areas and (4) the surface features of the earth.

THE WORLD'S GREAT RIVERS—THE ST. LAWRENCE

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IN the gulf and estuary of the St. Lawrence River, North America has an open gate turned invitingly toward Europe. It is not surprising, therefore, that but a few years elapsed after the discovery of the western continents before the enterprising Cartier came upon this entrance and turned his ships in to explore. Inside a most remarkable water lane led to the very heart of a great continent.

The St. Lawrence River, in its most limited bounds, begins at the foot of Lake Ontario, opposite the city of Kingston, and extends about 775 miles in a northeasterly direction to the Point des Monts which is generally conceded to mark, however poorly, the inward limit of the gulf. The river is seldom less than two miles in width and at several points expands to lake-like proportions. At the Point des Monts it is about eighty miles wide.

Scattered at intervals throughout the course of this great stream are numerous islands. At the very outset, near the foot of Lake Ontario, a group commonly known as the Thousand Islands contains in reality more nearly two thousand isolated points of very ancient and contorted rock. Projecting above the stream, gray sided and forest covered, they break the monotony of the water surface and create in that placid body the mystery of countless winding channels.

In the clearness of its waters and the constancy of its volume the St. Lawrence is of all great rivers peculiar. The cause for this is found in the fact that the stream has its source in the greatest body of fresh water in the world, which acts as a settling tank to remove sediment and as a storage reservoir to regulate its flow. It is the only river of great size whose volume is not sensibly affected by seasonal changes. From flood-

time to drought there is seldom more than a foot of rise or fall in the river's level. Somewhat greater variations follow wet or dry years and long periods of prevailing wind upon the surface of the lakes, a condition which tends to pile up the waters, withholding them from their outlet or supplying them in unusual amount according to its direction.*

The total area drained through this channel is about 565,000 square miles, greater than that drained by the Ganges or the Nile and nearly one-half that finding an outlet into the Gulf of Mexico. These figures, of course, include the entire area draining into the Great Lakes. Including the most distant tributary to Lake Superior, the system has a total length of over 2,000 miles. The chief tributaries to the St. Lawrence proper enter from the north; the Ottawa, the St. Maurice, and the Saguenay. The headwaters of these streams, together with those of the less important tributaries, whether they enter from the north or from the south, lie in the bordering uplands and their waters descend to the main stream over numerous falls and rapids. These waters eventually may, and already have in part, become available for the production of power. The total power obtainable from these sources is somewhat difficult to estimate but including the tributaries from the south there are, perhaps, two million horse power; about one fourth that which the Niagara Falls are capable of producing.

Contrary, again, to the usual habits of rivers, the St. Lawrence has its narrow valley and steep, rocky banks near its mouth and its flat, fertile plains near its source. From the Point des Monts up to Quebec the traveller passes gray, rugged promontories, sparsely wooded and, as yet, little modified by human habitation. Small villages cling in the nooks of these rocky walls or rest upon the bits of level land at the mouths of tributary streams. In these cramped surroundings agriculture is but poorly developed and the unenterprising inhabitant ekes out an existence by fishing in the river, caring for the ever-present cow, planting his little strips of grain and vegetables, and collecting the necessary wood from the hills above. Here, though a great merchant marine passes before their very doors, the ways of the outside world seldom find lodgement, and the housewives still practice the complex industries of their grandmothers. Beginning at Quebec, a low, flat plain, with slightly diverging boundaries, spreads out on either side of the stream. Here begins prosperity and interest in the affairs of the world. At Montreal this plain is about 70 miles wide and, with the exception of a few isolated hills, it has an elevation of less than 100 feet above see level. Constituted of fine, loose sediments this plain is mainly of great original fertility. It was long ago stripped of its forest of hardwood and in spite of abusive agricultural methods it is still very productive. Within this region the business of

*Browne: The St. Lawrence River.

eastern Canada concentrates, and here, at the head of ocean navigation upon the St. Lawrence, stands Montreal, the great city of the Dominion.

That the head of ocean navigation on a river should be over 600 miles inland is, in itself, unusual and requires explanation. Earlier in its history a river working well above sea level cut the channel now occupied by at least the lower portion of the St. Lawrence. After the channel was well advanced there came a relative subsidence of the land which put much of the river bottom not only down to, but below, the level of the sea. This brought about a deepening of the stream and its lower tributaries, particularly the Saguenay. Soundings in the St. Lawrence at the mouth of the Saguenay show nearly 200 feet of water, while the latter stream has in some parts of its course a depth of over 800 feet.

The actual fall in the St. Lawrence from the foot of Lake Ontario is 246 feet, an average of 3.6 inches per mile. Most of this fall, however, is concentrated in a series of rapids which occupy a relatively small part of the total length near the head of the stream. Aside from these the actual fall over some 700 miles of the river's length is only about 40 feet, or seven-tenths of an inch per mile. This low gradient in the lower course permits the effect of the tide to be felt about 100 miles above Quebec, over 500 miles from the mouth of the stream. A spring tide causes a rise of about 18 feet at Quebec.

This combination of low gradient and great depth makes the St. Lawrence a great natural highway but for the unfortunate presence of the series of rapids previously mentioned. Of these the most serious are the rapids of St. Louis, above Montreal, and the forty miles of rapids near Kingston. First in the former are the "LaChine (China) Rapids, so named because of the obstacle they presented to the early explorers in what they hoped might prove a route to the Orient. The first attempt to overcome these hindrances to navigation resulted in an artificial waterway about the Cedar, Cascades and Coteau Rapids immediately above Lachine. It was completed in 1781 and since that time improvement has been continuous. There are now, in the 100 miles between Lachine and the Galops Rapids, nearly 45 miles of canals, having 26 locks and a total lockage of over 200 feet.

Nor has the channel between Montreal and Quebec remained in its original state. Of sufficient depth for the sea-going vessels of early times, it provided, over certain shoals, for vessels of under 11 feet draught only. In 1844 dredging was begun on shoals aggregating 50 miles in length and distributed over thirty different places. By 1860 a 20 foot channel was opened and in 1882 it had increased to 25 feet. At present it is over 30 feet deep and 500 feet wide and provides for the passage of the large ocean steamships.

The effect of this improved channel upon the number and tonnage of

the sea-going vessels entering at Montreal is apparent from the following figures:

Year	Number of vessels	Average tonnage of vessels
1850	210	220
1880	710	900
1890	776	1630
1900	850	2550
1905	833	2690

In fact, Monereal is now exceeded in the actual amount of sea-going tonnage entered at North American ports only by New York, Boston, Philadelphia, and New Orleans.

One great handicap Montreal has in her struggle for a leading place as a port of entry; the fact that the St. Lawrence is closed by ice from the first of December to the first of May in the average year. For this reason two of the great Canadian railways running into Montreal cross the river and seek the Atlantic seaboard through the State of Maine. Other difficulties may be overcome but the difficulty interposed by climate is insurmountable.

That the St. Lawrence River of the future shall be vastly more important than that of the present seems more than likely. Montreal is actually 400 miles nearer the North European ports than is New York and, with the increased importance of the products of the Canadian Northwest which seek their European market by this route, traffic should steadily increase. Especially is this true if the projected Ottawa Valley Canal is ever constructed and successful. This project is for a ship canal to connect Montreal and the St. Lawrence with Georgian Bay by way of the Ottawa River. This would shorten the actual distance to Lake Superior by 350 miles. It may be, however, that the gain thus made would be lost in other ways.

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THE JOURNAL OF GEOGRAPHY

Madison, Wis.

COMMERCE OF THE WORLD IN 1910

AN INCREASE OF 50 PER CENT OVER 1900—REASONS—ONE-HALF OF TRADE HELD BY FIVE COUNTRIES*

THE value of the commerce of the world in 1910 was 32,400 million dollars, which was greater than that of any preceding year and fifty per cent more than in 1900.

The chart of concentric circles gives the combined total value of the imports and exports during decennial years. The wonderful progress foreign trade has made is clearly shown by the fact that the total value in 1910 is eight times as much as it was in 1850.

The value of the foreign trade of any nation is always much smaller than that of the home trade, but unfortunately data in regard to the value of the latter is not available. In the United States the value of the manufactured products in 1905 was 16,000 million dollars; that of the farm products was 7,000 million dollars and that of the mineral products, 3,000 million, or a total of 26,000 million dollars. The exports amounted to 1,117 million dollars, or only about four per cent of this first value of the principal classes of articles entering into commerce, without taking into consideration the multiple transactions that take place before they finally reach the consumer.

The prosperity of a nation, therefore, does not depend so much upon the condition of its foreign trade as it does upon that of the production, distribution and consumption of its products at home. Nevertheless, owing to the interdependence of nations arising from the development of commerce, foreign trade is a necessity to almost every country.

Various reasons are given for the extraordinary increase in commerce, among which the large amount of gold produced is given the greatest prominence. It may be true that the rise in prices has been caused by the large gold production, and that increased credits based upon this gold are an important factor in the increase of commerce. The long years of peace among the leading commercial nations, however, have been more effective in bringing about the increased use of credits in commercial transactions than anything else. The great improvements in the means of production and transportation have also been important factors in the present advanced state of foreign commerce.

While the value of the gold output of the world has increased from 67 million dollars in 1851 to 465 million in 1910, the production of coal has risen from 81 million tons to 1,139 million and the production of pig iron from 4,750 thousand tons to 65,860 thousand in 1910, or nearly fourteen times as much. Coal and iron are generally considered the most im-

*The JOURNAL is indebted to Mr. John J. Macfarlane, editor of Commercial America, for the cuts and most of the data of this article.

portant factors in the development of the manufacturing industries of any nation and the possession or the securing of a supply of these is more important than the possession of gold mines. The three leading coal and iron nations are also the three leading commercial nations.

The charts of imports and exports give the values for every nation importing or exporting over 100 million dollars' worth of goods in 1910. A glance at them brings out the fact that *more than one-half of all the imports and exports are into or from five nations—Great Britain, Germany, United States, France and Holland.* The imports of these nations amount to 9,103 million dollars, or 54 per cent, and the exports amount to 7,965 million dollars, or 51.5 per cent, of the total values.

NET INCREASE OF IMPORTS AND EXPORTS AND PER CENT OF INCREASE FROM 1900 TO 1910

IMPORTS

	Net Increase Millions of dollars		Per cent increase
Germany	754	Argentina	211
United States	734	Brazil	180
Great Britain	559	Canada	154
Holland	528	Chile	132
France	398	China	96
Belgium	332	United States	89
Italy	291	Italy	89
Canada	274	Belgium	78
Austria	235	India	64
Argentina	230	Japan	62

EXPORTS

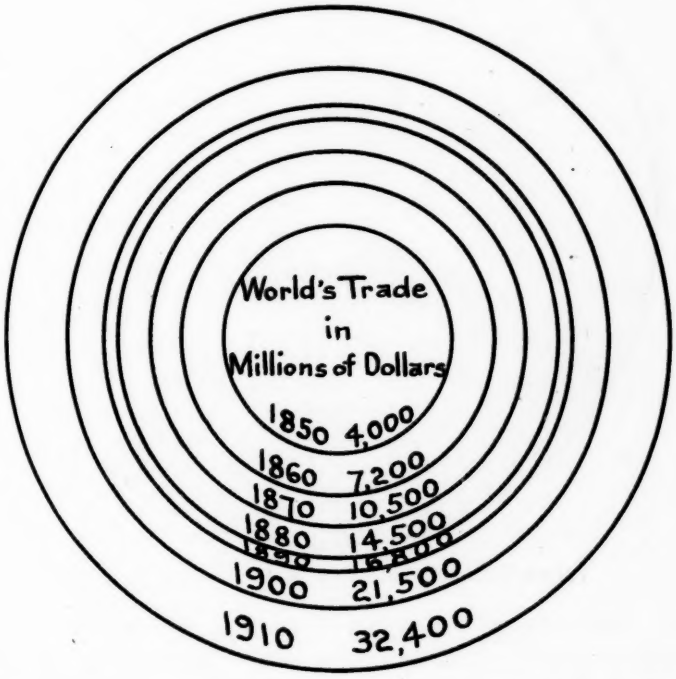
	Net Increase Millions of dollars		Per cent increase
Germany	681	Cuba	233
Great Britain	678	Argentina	141
Holland	425	Japan	127
United States	374	Algeria	125
France	366	China	115
Russia	344	Dutch East Indies	100
India	328	India	96
Argentina	210	Russia	93
Belgium	195	Chile	91
China	134	Mexico	88

From the above table it will be seen that Germany increased both its exports and imports from 1900 to 1910 more than any other nation and that each of the five leading commercial nations has a larger net increase than any other nation not one of the five. In the percentage column none of these nations appears, except the United States. Nearly all of the ten nations in the column of increased percentage are agricultural nations, showing that they are becoming more important in foreign trade. In imports Argentina trebled, and Brazil, Canada and Chile more than doubled their values during the last ten years. In exports Cuba more than trebled.

COMMERCE OF THE WORLD

IMPORTS AND EXPORTS COMBINED

Decennial periods, 1850-1910



Argentina, Japan, Algeria, China and the Dutch East Indies more than doubled, and India, Russia and Chile almost doubled their values during the same period.

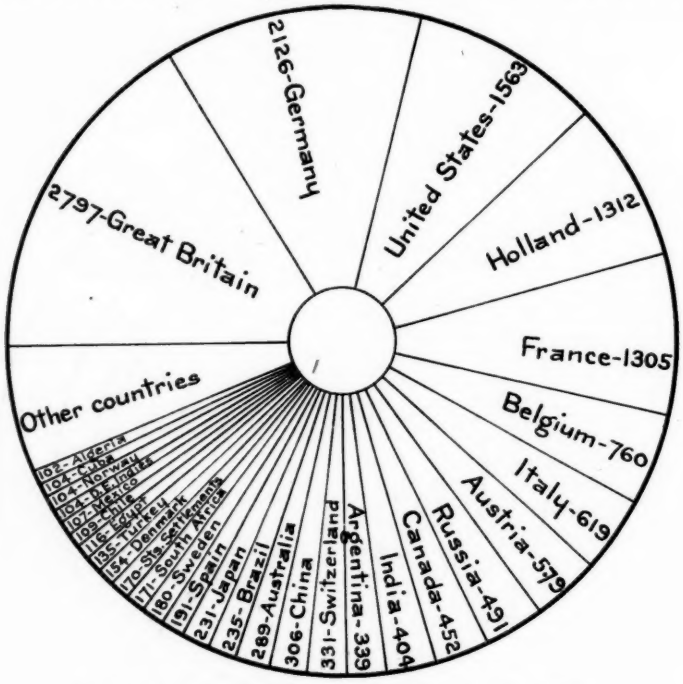
By comparing the charts of imports and exports it will be seen that every European nation given, with the exception of Russia, had an excess of imports and every non-European nation, excepting Canada, China, Japan and Algeria, had an excess of exports.

An excess of exports is natural in agricultural and newly developed

countries. These countries have to borrow money to build their harbors and railroads and develop their manufacturing and other industries. An excess of imports is natural in older countries and those that are able out of accumulated capital to loan money to other countries. No rule exists by which the prosperity of a country can be determined by its excess of either imports or exports of merchandise.

The three leading commercial countries, Great Britain, Germany and the United States, have increased their total trade 3,780 million dollars in

IMPORTS BY COUNTRIES—1910. TOTAL VALUE, $16,920,000,000



Values by countries given in millions of dollars

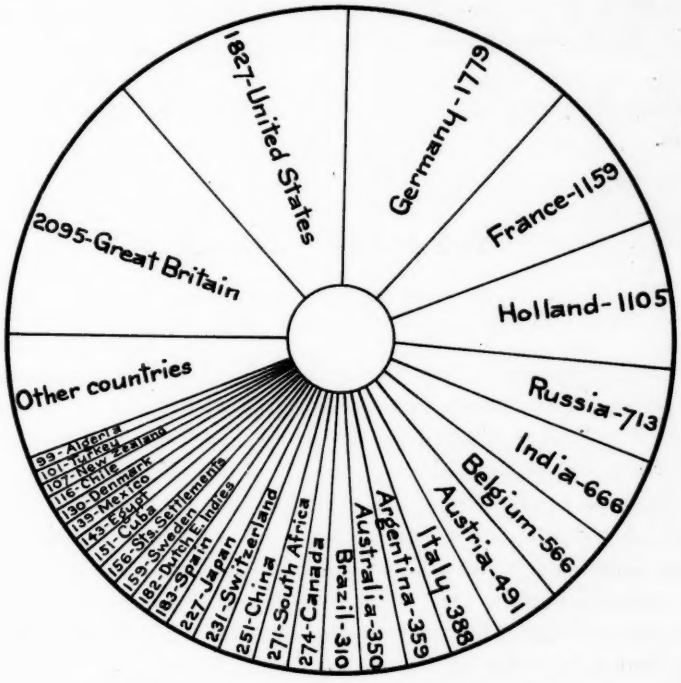
ten years. The value of the exports from these countries is not very far apart, each is striving to secure a still larger share of the world's trade. Manufactured products form a large part of the exports from these countries, namely, 80 per cent from Great Britain, 60 per cent from Germany and 45 per cent from the United States.

The exports from Great Britain and Germany consist mainly of the same kind of goods, while those from the United States include petroleum, copper and lumber, with which the other two countries do not compete; consequently, the rivalry between the first two is greater than with the United States. It is generally considered that the export of manufactured

products, more especially machinery, by any country, is an evidence of its having reached a high state of efficiency. The value of the exports of machinery from Great Britain in 1910 was 144 million dollars, from the United States, 110 million, and from Germany, 110 million, amounts which far exceed those of any other nation.

The trade of the four leading nations in manufactured products is given below.

EXPORTS BY COUNTRIES—1910. TOTAL VALUE, $15,480,000,000



Values by countries given in millions of dollars

MANUFACTURED PRODUCTS

	Imports			Exports			Per cent Increase of exports
	Values in millions of dollars						
	1890	1900	1910	1890	1900	1910	1890-1910
Great Britain	412	623	764	1099	1144	1669	61%.
Germany	234	286	326	511	657	1141	123%
United States	347	328	663	177	496	827	367%
France	126	163	260	386	385	566	47%

From the above it will be seen that while Great Britain exceeds in the exports of manufactured goods, both Germany and the United States

have increased their exports by a much greater per cent, namely, 123 per cent for Germany and 367 per cent for the United States, against 61 per cent for Great Britain. The most remarkable thing about the above table is that these great manufacturing nations are also the largest importers of manufactured products. In Great Britain and the United States the value of the imports of the manufactured goods is greater than that of the total imports of any nation not included in six leading importing countries.

The United States is likely to increase its exports of manufactured products more in the coming years than in the past, because of the decrease in the exports of food products due to the increased home consumption.

During the year 1911 there has been an increase of trade in most countries.

THE JORDAN VALLEY

By FREDERICK HOMBURG,
Woodward High School, Cincinnati, Ohio

THE rift that yawns between the highland of Judaea, Samaria and Galilee on the West, and the land of Moab, of Ammon and of Gilead on the East is drained by the stream celebrated in song and story —the Jordan. It is formed in the north of the Holy Land by the confluence of three small streams which come leaping from the heights of Hermon. After union, the waters flow south through a swampy region including Lake Huleh, an unhealthy land, whose seedy thickets shelter gypsies and wild buffalo. On leaving this region, the course of the stream becomes interesting. The level of the swamp is 2 meters above that of the sea; that of the Sea of Galilee, 16 kilometers beyond, is 208 meters below the sea level; so decided a difference in level for so short a distance means rapid flow, and we find the Jordan connecting the two basins by a series of cataracts through a deep, narrow gorge with steep basalt walls. The Sea of Galilee, or Lake Gennesaret, or Lake Tiberias, is a smiling sheet of fine, clear water, full of fish, once enlivened by fishermen's boats, now almost deserted. South of Lake Tiberias, between abruptly rising heights, there stretched a plain of varying width in which the Jordan has cut a sinuous and shifting channel. It meanders so, that its course from the Sea of Galilee to the Dead Sea is three times as long as the air line. The many rapids which justify the river's name, Jordan, meaning "swiftly flowing," render it unfit for navigation; and the low position of its sunken channel prevents its use for irrigating purposes. In spite of four bridges (the newest one near Jericho) the river is a hindrance to traffic,

for its numerous fords are passable only at low water. Were it not for tradition and sentiment and the consequent attraction of tourists, and the fact that the Jordan affords drink to men and animals, it might be called a worse than useless stream.

The country about the river, whose water is often bottled and sent to Christian lands, there to be used at pompous baptisms, is private domain of the Turkish sultan. Toward the end of its course, the Jordan flows through a country which, outside of some oases, is nearly a desert and which foretells the nearness of the Dead Sea. The sacred waters of the Jordan do not mingle with those of other rivers in the common ocean, but are lost in a lake without an outlet and without life. The shores, too, are of desolate aspect; hence its name is entirely appropriate—the Dead Sea. The absence of life is accounted for by the fact that the water is six times as salty as ocean water; and this is due to the minerals washed in from an arid land, and to enormous evaporation. The shores likewise are salty, hence perfectly bare and barren; salt pillars on the west side recall the story of Lot's wife. As in ocean water, the main solid in solution is common salt; but there is also magnesium chloride which adds bitterness, and calcium chloride which imparts a somewhat oily character. You need not be a swimmer to remain at the surface of the Dead Sea; for floating is no art in a liquid whose specific gravity is higher than that of the body. On emerging from the bath, the concentration of the brine and the dryness of the air cause the hair to become quite salty. When the water is agitated, the heaviness of the salty waves causes them to strike like iron, and they prove destructive to light boats. But the Dead Sea was not always so; ancient shore lines indicate that the Jordan Valley was at one time a fresh water lake with an outlet into the Mediterranean, and a surface some 30 meters above the level of the sea. In those days the Dead Sea and the Sea of Galilee were one; after the drainage ceased, and especially after the lakes were parted, salt accumulated in the lower one. The difference in level between the two lakes is quite marked; the surface of the upper lake being 208 meters, that of the lower 393.8 meters below the level of the sea; so throughout its course the connecting river has a very appreciable fall. But with all its swiftness, the Jordan could not have carved out this deep valley. Not connected with the sea and flowing far below sea level, where could it have deposited the material? The rocks of the valley sides and their dip prove that it is one of that rare type called rift valleys or valleys of fracture. The faulting may have been produced by a series of catastrophes; and they must have been veritably earth-shaking. History records a number of disastrous earthquakes in the Holy Land, proving that even recently this has been unstable ground, and the story of the destruction of Sodom and Gomorrah may have had such a clamity as its basis. Not only is the surface of the Dead Sea nearly 400 meters below the sur-

face of the ocean, but in places the lake is nearly 400 meters deep. Hence the Jordan Valley is most remarkable in that it is the deepest furrow on the wrinkled face of old Mother Earth.

THEME WRITING IN GEOGRAPHY

By LOUISE W. MEARS,
Peru, Nebraska, State Normal School

THE writing of themes on geographical subjects is a helpful exercise in any geography class. A well chosen subject and ample time to collect material for the composition will not only fix facts, but train in the habit of looking upon the geographical side of questions. Considering that each pupil can do justice to a limited number of themes only, the choice of subjects is all-important, dealing only with such as have distinct value, affording a variety of material, with as little overlapping as possible.

One industry if thoroughly described is enough for a pupil to undertake along that line. Suppose he takes up next the description of one large city, or a canal, or a mountain. This does not mean any city, or any canal or mountain. In the choice lies the opportunity to make a subject an avenue to much geographical knowledge, and to make every minute spent upon it pay. Teachers will sometimes assign such themes as Omaha, Kansas City and Sioux City—cities that figure as gateways to the West, river towns, railroad and meat-packing centers. To assign more than one of these as a theme for a pupil's consideration would be out of proportion to the wide field of geographical material. If possible, select a city that possesses the largest number of natural factors for greatness; viz., a good harbor, at the mouth of a large river, nearness to mineral and vegetable riches, a healthful climate, etc. See that each factor is well treated in the theme, so that when discovered in relation to one city, it is then recognized as the factor likely to determine the location of any large city.

Allowing a pupil freedom of choice in selecting a theme will lend force to the work done, the teacher still retaining control of subjects by providing the list from which the choice is made and offering suggestions. The following is a partial list of geographical themes prepared for a large high school class in review geography:

SUBJECTS FOR COMPOSITION IN GEOGRAPHY

Invention of the Cotton Gin
Map Making
Lumbering in Northern States
Lumbering in Southern States
The Lower Mississippi
Gold Mining
Diamond Mining
Paper Making

The Manufacture of Flour
Suez Canal
Panama Canal
Arctic Explorations
Antartic Explorations
Work of Dept. of Agriculture
Light House and Life-Saving Stations
Herring Fishing
Salmon Fishing
Cod Fishing
Oyster Fishing
Seal Fishing
Whale Fishing
Sponge Fishing
Beef Packing Industry
Carnegie and Steel Works
St. Lawrence System
The Upper Mississippi
Yellowstone Park
Steamship Routes
Life of Carl Ritter
A Local Industry
A Railway System
Historic Rivers
The South—Old and New
Shipbuilding
Our Coasting Trade
Distribution of Population
Beasts of Burden
Noted Waterfalls of the World
Petroleum
Glass Making
Ocean Life
The Everglades of Florida
The Hudson Bay Fur Co.
Our Trade with the Orient

DULUTH.—The population of Duluth in 1880 was 3000; in 1900 it was over 33000. Had the enlarging of the Soo Canal for lake vessels anything to do with this remarkable growth?

Duluth has an elevator storage for about 20,000,000 bushels of grain. Where is this grain produced? The contents of over 3000 through freight cars from the west are daily reloaded into the sea-going crafts at New York. Much of this is grain from Duluth. How would it make the journey from Duluth to New York?

Duluth is the port of hail for 331 vessels, and surpasses all the other Great Lake ports in point of tonnage shipped. Why?

Iron ore is abundant near Duluth and is shipped from this port. Where is it taken and how? There are no large smelting furnaces at Duluth. Why?

In 1902 Duluth shipped 280,000,000 feet of lumber. Is this industry likely to increase or decrease?

Eight important railroads enter the city. Why is it such a railroad center? Two of these roads connect Duluth with Puget Sound. These roads have few difficult grades and carry an enormous intercontinental traffic. Why did they choose Duluth as their eastern terminus? How would the grain from the Duluth district be taken to Asiatic markets?

C. M. SANFORD.

USE OF THE COMMERCIAL WOODS OF THE UNITED STATES; PINES

BULLETIN No. 99 of the United States Dept. of Agriculture, by William Hall and Hu Maxwell, contains a great deal of valuable and interesting information regarding the physical properties, supply, uses, and history of the pines of this country. Copies of this bulletin may be obtained free, by application to the Forestry service, Department of Agriculture.

The following quotations will give some idea of the scope of the work, which describes thirty-seven species of pine. Only those paragraphs dealing with yellow pine, white pine, and western yellow pine will be reviewed.

Introduction.

"Thirty-seven species of pine grow in the United States, no one species in all the states, yet, with perhaps one exception, no state is without one or more. Some, as the loblolly pine of the South, the white pine of the North and East, and the western yellow pine, occupy large regions in considerable abundance, while others, as the Apache pine of the Chiricahua Mountains of Arizona, the Torrey pine along the Soledad River in California, and the sand pine near the Gulf Coast of Florida and Mississippi, are so scarce that few persons ever see and recognize them. Yet no species of pine is so scarce that it is not made in some way to serve man's needs."

"About 48 per cent of the total lumber output for the United States in 1908 was pine. The long leaf probably furnished more than any other single species, and the white pine was next. The western yellow pine, which is more widely distributed than any other pine of this country, is a large producer of lumber, and the western white pine and the loblolly also rank high in quantity. This bulletin considers each species separately.

YELLOW PINE

"Four important timber trees of the southeastern United States are usually grouped as one in the lumber market, and are sold under the common name of yellow pine. They are longleaf pine, shortleaf pine, loblolly pine and Cuban pine. In appearance, the woods of these four trees are so nearly alike that it is sometimes difficult to distinguish one from the other; yet in some particulars there is considerable difference. This is often seen in the growth rings. Longleaf annual rings are usually narrow, shortleaf wide near the heart, followed by a zone of narrower rings, while loblolly's rings are generally very wide. The Cuban pine also has wide rings."

"The commercial range of longleaf pine lies in Alabama, Florida,

Georgia, Louisiana, Mississippi, North Carolina, South Carolina and Texas. The total stand of the timber pines of the South is estimated by the Bureau of Corporations, at 384 billion feet. Of this amount, 232 billion feet is longleaf and 152 billion feet of shortleaf and loblolly pine. It has been roughly calculated that, at the present rate of cutting, the southern pines will last from 20 to 30 years."

WHITE PINE

"White pine occurred originally in commercial quantities in Connecticut, Delaware, Georgia, Illinois, Indiana, Kentucky, Maine, Maryland, Massachusetts, Michigan, Minnesota, New Hampshire, New Jersey, New York, North Carolina, Ohio, Pennsylvania, Rhode Island, South Carolina, Tennessee, Vermont, Virginia, West Virginia and Wisconsin."

"The cut has probably exceeded that of any other species. Several timber trees have a wider commercial range, and at the present time two yield more lumber yearly—the Douglas fir and the longleaf pine—but white pine was the leader in the markets for 250 years. Though today the original forests of this species are mere fragments of what they once were, the second growth in some regions is meeting heavy demand. In Massachusetts, for example, the cut in 1908 was 238 million feet, and practically all of it was second growth. It is not improbable that a similar cut can be made every year in the future from the natural growth of white pine in that state. It might be shown by simple calculation that if one-tenth of the original white pine region were kept in well-protected second growth, like that in Massachusetts, it would yield annual crops, successively for all time, as large as the white pine cut in the United States in 1908. To do this would require the growth of only 25 cubic feet of wood per acre each year, and good white pine lumber need never fail in this country, provided a moderate area is kept producing as a result of proper care."

"During the past thirty years the largest cut of white pine has come from the Lake states—Michigan, Wisconsin and Minnesota. At an earlier period it was from Pennsylvania and New York, and still earlier the center of supply was New England. The output from the Lake States in 1908 was about 30 per cent of that in 1892. This decrease in output was due to the depletion of forests."

The section on early development furnishes interesting facts regarding the lumbering of pine in New England, which was even more wasteful than was the process in the Lake States.

"It was claimed (in 1706) that only one tree in four was saved, the others being destroyed. It frequently happened that half a log was cut off and thrown away as slab. At Bangor the accumulation of slabs thrown into the river was so great that the channel was blocked and passageways for vessels were cleared at great cost. . . . . In 1700 the New

Hampshire lumbermen met, without recorded complaint, the demands of a market which insisted upon having white pine planks 25 feet long and 15 or 18 inches wide, and for ship decks, 36 feet long and 3 feet wide."

The history of white pine lumbering, as logging operations followed the retreating forest line westward, for over two and a half centuries, is one of the best chapters in the bulletin. The uses of white pine discussed are: shipbuilding, bridges, houses, shingles, furniture, boxes, cooperage, farm uses, water pipes, and by-products.

WESTERN YELLOW PINE

"The total stand of western yellow pine in 1909 has been estimated at 275 billion feet, b. m. Douglas fir was the only species showing a greater total, and the southern longleaf pine was next below. The four southern yellow pines were estimated at 110 billion feet more than western yellow pine. White pine and Norway together amounted to only one-fourth the quantity of this western timber."

"Few trees have a commercial range as wide as that of the western yellow pine. It has its best development on the Pacific Coast, but it covers one-third of the United States. In 1908 the largest output was in California followed by Oregon and Montana, in the order named. The enormous total supply of western yellow pine is not the only factor in its importance. It is practically the only timber in extensive regions, where its value can scarcely be overestimated."

E. F. BEAN.

REINDEER PROGRESS IN ALASKA

LILLIAN E. ZEH in *The Southern Workman*

THE herding and breeding of domesticated reindeer, introduced as an experiment a number of years ago, with animals imported from Siberia by the Government, has now become the most prominent feature of the industrial education of the Eskimo, and the main activity of many native villages of arctic Alaska. The progress in civilization that has been made by lifting up the natives, formerly living as savages and eking out a precarious existence by hunting, with no other domestic animal than the dog, to the estate of civilized, self-supporting herdsmen, as accomplished through the reindeer industry, is a remarkable educational achievement.

The Alaska Reindeer Service has now reached its most successful stage, as it marks the beginning of the period of full utilization of all the reindeer owned by the Government for the benefit of the native population. At the present time there is hardly a surplus Government reindeer north of the Kuskokwim River. This has been made possible by the establishment of new reindeer stations, by the employment of more natives as chief

herders, by accepting the largest practical number of apprentices, and by transferring reindeer to both chief herders and apprentices in lieu of salary supplies, the chief aim and fundamental policy of the Government being to turn the reindeer over to the natives as rapidly as the latter learn the industry and appreciate its value. The total number of reindeer in Alaska at the last census was nearly 23,000, and of this number over 11,000 are owned by the natives. One of the most striking and gratifying features is the large income which the natives derive from the sale of reindeer products, their share for the past fiscal year having been $18,000 and over. This amount does not include the value of the reindeer skins used for clothing nor that of the meat consumed as food. These material benefits and the very considerable income thus derived demonstrate the fact that the reindeer industry has become one of the most prominent factors in the economic life of the Eskimo.

The total number of Alaskan reindeer is distributed in herds among twenty-eight stations, eighteen of these being owned by the Government and ten by church missions. The Lapps own over three thousand. The natives are very anxious to get deer, and look upon them as a safe investment for their earnings, usually taking deer for services in preference to cash when an opportunity is offered. The Government does not sell deer; this is done by natives and missions alone. The various missions are each furnished, by the Government, a herd of one hundred deer on loan for a period of five years. At the end of this time the original number must be returned. The mission keeps the increase of fawns, which amounts to several hundred, derived from the Government loan. The Moravian Mission of Bethel has one of the largest herds, nearly three thousand. Other missions having over one thousand deer, all in Arctic Alaska north of the Yukon, are located at Golovin, Kotzebue, Shishmerof, and Cape Wales. At Barrow, the most northern point on the American Continent, there is a herd of three hundred. The total population here is about four hundred men, women, and children. One native, "Takpuk," is considered the richest man of that region, as he owns a herd of one hundred and thirty-seven reindeer.

The missions support and educate a number of young apprentice herders. The native herders also take on apprentices and award them six deer a year in payment for their services. The Laplanders take a loan of deer for five years from the Government and give their services as instructors for that period. At the end of five years the Lapp returns the one hundred deer and becomes an independent herder himself with the large increase of reindeer he has obtained from the herd. The Lapp herders are not interested in the extension of the reindeer among the natives. Some of the largest owners of deer are Lapps, at least a half dozen of these men having accumulated herds of from five to eight hundred.

In introducing the reindeer as a means to promote the Eskimos' industrial life and to provide a permanent livelihood for them, it has been found necessary by the Government to put the young natives through a course of training. Those who get their deer directly from the Government serve an apprenticeship of five years. There are several hundred of these at present. They are bound by a written contract the strict terms of which they cannot violate without danger of losing their annual allotment of reindeer and suffering discharge from the service. This caring for, training, and breeding the deer is an education in itself, and the best which the Government could give to the young natives. With careful training the Eskimo boys make excellent herders. They readily learn how to take care of reindeer, to throw the lasso, to harness and drive the deer, and to watch the fawns. Siberian herders were at first imported to teach them, but of late years the more intelligent and efficient Laplanders, who have learned by centuries of experience the breeding of reindeer, have been secured. The Eskimo boys excel the Lapps in some respects; they can lasso better, and many become experts in making harnesses and sleds. The minding of the herd requires constant vigilance, especially in the spring during the fawning season. Then the herders have to keep watch with their rifles by turns, day and night, in order to protect the herd from the ravages of the Arctic wolf and the dogs. In the ear of each Government deer a little aluminum button is fastened securely, and all private owners and herders have a mark which must be registered with a local superintendent of a reindeer station and also at Washington. Besides being taught the art of "deermanship" the apprentices are instructed in keeping accounts, in the methods of marketing reindeer, and in other practical matters connected with the industry. No apprentice can become a herder unless he is proficient in elementary reading, arithmetic, and writing. At the end of his apprenticeship the young Eskimo native is allotted a number of deer by the Government, and with the increase obtained during the interval of his five years' service, each apprentice will have, on an average, a herd of fifty reindeer. As this herd will double itself every three years, the graduate apprentice will have a herd which will assure him a self-supporting income quite large enough to satisfy the economic wants of himself and family in the future. He is thus established in business by the Government and is given free pasturage thereafter. A reindeer produces one fawn in the spring each year for ten years.

Among the useful and profitable products of the reindeer are the skins for clothing. Of these pelts most varied use is made. From them are fashioned the tight-fitting trousers and that wonderful outer garment, the "parka," universally worn in winter by both male and female natives and by many whites. The "parka" extends to the knees and has a close-fitting hood which keeps the head and shoulders comfortably warm even

in the severest weather. These reindeer garments are remarkable for their excellent quality of resisting moisture and cold. A close examination of the hair of reindeer furnishes an explanation of its peculiar value. The hair is not merely a hollow tubular structure with a cavity extending throughout its entire length, but it is divided, or partitioned off, into exceedingly numerous cells like watertight compartments. These are filled with air, and their walls are so elastic and at the same time have such strong resisting power that they are not broken up, either during the process of manufacture or by swelling when wet. The cells expand in water, and thus it happens that a person clad completely in garments made of reindeer hair does not sink when in water, because he is buoyed up by the air contained in the hundreds of thousands of air cells.

As the mineral industry continues to grow in Alaska, the natives and graduate apprentices can earn high wages as teamsters, hauling supplies and furnishing fresh reindeer meat to mining camps in the interior at points remote from railway and steamboat transportation. Well-trained sled deer have been used to carry the mail 650 miles, from Barrow south to Kotzebue. This is the most northern mail route in the United States and likewise the most perilous and desolate mail trip in the world. Two trips are made a year and $750 is paid for each journey. The average speed is from 40 to 50 miles per day, the reindeer keeping up a steady trot. One of the latest and most remarkable feats, showing the capacity of the reindeer for sledge driving, was that accomplished by Mr. W. T. Loop, the superintendent of the Government reindeer service. During the recent winter tour of inspection Mr. Loop traveled more than 2500 miles with a reindeer sled over the frozen tundra and ice-bound rivers of the lower Bering Sea region from the middle Yukon to the coast of the North Pacific. Part of this route for several hundred miles lay through a country which had been so little traversed that not even native trails had been made. The Alaska reindeer service is under the direction of the United States Bureau of Education.

A REFERENCE BOOK IN COMMERCIAL GEOGRAPHY

WE have previously referred to Toothaker's *Commercial Raw Materials* (Ginn & Co. $1.00) as a desirable reference book for use in connection with the study of Commercial Geography. A much more extensive book along similar lines has recently been published. It is Freeman and Chandler's *World's Commercial Products.* (Ginn & Co. $3.00). It is a book of nearly 400 pages. One of the authors has spent many years in various parts of the tropics and is especially well qualified to write regarding tropical products. Both authors are connected with the London Imperial Institute.

Only vegetable products are treated, but the way in which they are treated and the great number of illustrations (many in colors) make the book both interesting to read and attractive to look at. The illustrations are of unusual merit, large, clear and chosen with judgment. For example, the chapter on rice has over 25 illustrations covering every phase of rice production from the plowing of the marshy soil to the final preparation of the rice for market. Typical scenes in all of the leading rice-growing countries are shown. The processes by which these commercial products are grown, harvested, and prepared for use are described and illustrated. Distribution maps are freely employed. Quantities of the leading products which are produced by various countries and market values are given, together with any amount of general information of the kind that teachers and interested students like to get hold of. The book is not a substitute for the old standard *Roman Handbook of Commercial Geography* (Longmans, $4.80), but it is more inviting on account of its excellent illustrations, and is written in a style better adapted to the use of pupils. R. H. W.

EDITORIAL

No one can have watched the evolution of educational thought and practice in this country during the past ten years and fail to be impressed with one fact. This fact is,—that despite the ripples and eddies on the surface, the current of educational thought is running steadily in favor of shaping school work to the end that it shall teach useful knowledge and fit young people to do useful things. One scarcely hears in any educational gathering any serious discussion of the old theme of formal culture. But every gathering of school men is the occasion for both formal and informal discussion, in the meeting, on the street and in the hotels, of questions bearing upon the introduction into the schools of courses in manual arts, domestic science, business practice, agriculture and other forms of school work supposed to be practical. Here in the insurgent Middle West the desirability of such courses has passed the discussion stage and practically every school is giving as much of this sort of instruction as its means will allow. Much of this work is poorly done, of course, and hostile critics may find ample opportunity to point out faults. It is quite probable that this type of school work will not prove as valuable as its advocates predict; things seldom do. It seems clearly evident, however, that the fitness of a study to claim a place in the school curriculum is going to be tested by different standards during the next generation than the ones used in the last generation. There are a good many people who believe that the mere *intellectual* training of a boy, no matter how well done, does

not necessarily make for efficiency, or for morality, or for patriotism or for good citizenship.

Geography is only one branch of study, and it has never been assumed to have any particular value in training pupils into either moral or patriotic citizens. But geography ought to contribute something toward making more useful members of society. College geography may properly aim to be disciplinary, because college students are a picked class, preparing for intellectual callings. They have (supposedly) come to college primarily for intellectual training. Normal school geography has a somewhat different aim. People go to normal schools to prepare for a particular vocation—teaching. Normal school geography is directed more to the making of efficient teachers of geography than to the making of scholarly graduates. The learned scholar and the efficient teacher are not the same. Nevertheless, thorough scholarship is not a bad thing for a teacher, and one of the conspicuous weaknesses of geography teaching in American schools is the inadequate knowledge of geography possessed by so many teachers of the subject.

High school geography has a still different reason for being. High school pupils are boys and girls in their middle teens. Very few of them have any clear idea of what their life work will be. They are after an education, or the elements of one. So far as geography is concerned, it makes little difference whether the pupil is to become a banker, a farmer, a merchant or an intelligent mechanic. Every person of even moderate education desires to have, and is expected to have, some knowledge of the geography of the world.

Coming back now to the point which we sought to make earlier;—namely that there is going up everywhere a demand that our public schools teach those things, and teach them in a way which shall prepare young people more directly to do useful service when they leave school. Is the kind of geography which we have been teaching in the high school disciplinary? No such claim could be substantiated. Is the kind of geographical knowledge gained in the usual high school course practical? Does it give the pupil the kind of knowledge that makes him generally intelligent about geographical matters? Physical geography is the phase most commonly taught. The writer of these lines has just returned from a visit to several high schools. He visits a considerable number every year and has been doing so for years. He is now teaching geography to nearly 200 college students, most of whom came from high schools, and he does this with a different group each year. So far as this experience reveals the actual facts, it does not seem that the kind of geographical knowledge which we are giving high school pupils is very accurate, very practical, or very permanent.

The demand of the times is for results, not vague, intangible, results,

but results which show. Almost every one of the older studies is on the defensive; somebody is trying to displace it. We who know the splendid inherent possibilities of geography must see to it that those possibilities are, to a reasonable extent, realized. School geography must contribute and contribute unmistakably to the social efficiency of young people who study it. It must give them knowledge which the rank and file of men need—knowledge about the people and countries of the world, and more accurate knowledge of their own country. In a recent test the writer found one young American in a college class who, on an outline map, named 37 out of the 46 states of the union incorrectly; and a very large number of his class-mates named more than 20 of them incorrectly; two could not locate the state in which they live. The thinking public is demanding that geography, and other studies too, either make good or make way. We commend to every geography teacher the recommendations of the N. E. A. committee on geography which reported at the Denver meeting in 1909. This report is printed in full in the proceedings of the Association (1909), and in the September, 1909, number of this Journal.

Some parts of it are herewith reprinted, and they deserve careful consideration at the hands of every teacher who has anything to do with shaping the high school course in geography.

EXTRACTS FROM THE REPORT OF THE 1909 COMMITTEE OF THE NATIONAL EDUCATION ASSOCIATION, ON SECONDARY SCHOOL GEOGRAPHY;

J. F. CHAMBERLAIN, CHAIRMAN

There has been marked advance in the subject of physical geography during the past sixteen years. * * *

In spite of this great advance there has been for several years a growing dissatisfaction with the course as at present organized. It is becoming increasingly evident that it does not meet existing needs. * * *

The following are the more important reasons for considering a change in the nature of the course imperative:

1. The course, as at present organized, places too much emphasis upon the detailed study and classification of land forms, and too little upon human response to those forms. The amount of space devoted to the lands by the various physical geographies varies from forty per cent to seventy-six per cent of the total.

2. A concrete study of human response to its environment does not receive sufficient attention.

3. * * * Secondary school geography should aim to render the greatest possible service in preparing the student to meet successfully the opportunities and obligations of life. * * *

4. Secondary school geography does not give the student a grasp of the natural resources, the industries and the commerce of the world. This

condition is, of course, inevitable so long as the geography in the secondary school is almost exclusively physical geography. * * *

5. Geography in the secondary school does very little as a preparation for the teaching of that phase of the subject which, in the elementary school, receives chief attention. * * *

6. Secondary school geography, as at present constituted, can not give the student that knowledge of the regions and peoples of the world which intelligent participation in the affairs of life requires. If broadly interpreted, this encompasses all of its weaknesses. * * *

* * * The lack of a knowledge of place relations, and of regional geography in a broad sense, is a weakness so universally shown by students in the entering classes of both normal schools and colleges as almost to discourage teachers of geography in those institutions. It is this knowledge which the average person, no matter in what walk of life, most needs. * *

Students should be encouraged to discover human response to its environment in the home area, as this gives reality to the subject and prepares them to work out and appreciate these relations in remote areas.

The amount of emphasis placed upon the study of various geographic forms and processes will depend, in part, upon the location of the individul school. A school situated in a mountainous region would very properly devote more time to the consideration of the influence of the mountains upon life than would one in the prairie section. In the first-named area the relation which mountains bear to climate, industries, settlement, and road building are relatively of greater importance than in the second, because they are at hand and are therefore more meaningful.

There should be a study of the larger features of the resources of our country, such as its soils, waterways, water powers, forests and mineral wealth. These features of our geographic environment are so vitally connected with the daily life of every individual, as well as with our national progress, that ignorance of them is a serious matter.

A knowledge of the general geography of the most important countries and peoples of the world is desirable.

The grasp of regional geography obtained in the elementary school is necessarily very meager. Geography is quite generally discontinued in the seventh grade, and practically no attention is given to regional geography in the high school. A knowledge of the geography of our own country and of Europe is a much-to-be-desired factor in good citizenship. A somewhat detailed study of these two regions would incidentally put the student in possession of considerable knowledge of the other continents. In addition to this he would gain a "geographic consciousness" that would be of great value.

If it be true that a large part of the education of the average individual comes through reading, then it is of the utmost importance that he

should be able to read intelligently. This, in the fullest sense, is impossible unless one's knowledge of geography is wider than that offered by the present high school course in this subject.

Pupils should acquire the ability to trace, in the large, the relationships between the most important geographic forms and geographic processes, and to appreciate the responses which human life everywhere makes to its physical surroundings.

Only as the student has observed the results of geographic processes on a small scale can he have any definite conception of the evolution of larger and distant geographic forms. When the student appreciates the significance of human response in the vicinity of his home, he has laid the foundations for the discovery and interpretation of this response in remote areas.

In order to make it possible to present the essentials as herein outlined, the committee makes the following recommendations:

1. Geography, touching as it does the daily life of every individual at so many points, should be, in some form a required subject in all secondary schools.

2. The subject should be pursued for not less than one year.

3. The subject should be presented during the first year of the high school course.

4. There should be at least five recitation periods per week.

5. About one-fourth of the total time should be devoted to laboratory and field work. This should by no means be confined to the study of physical geography. Much laboratory work and some excursions should be undertaken in connection with the commercial phase of the subject, and there should be carefully planned exercises based upon maps and models.

We recommend that about one-half year be devoted to the larger topics in physical geography, with the human side made more prominent than at present, and that the remainder of the year be given to a study of North America and Europe.

GEOGRAPHICAL ARTICLES IN RECENT MAGAZINES

Prof. Robert DeC. Ward has a highly interesting article on "A Visit to the Brazilian Coffee Country" in the October *National Geographic Magazine*. Beautifully illustrated.

David Fairchild has, in the same magazine, an illustrated article on "New Plant Immigrants" that is well worth reading.

Teachers who are following the pleas for a General Science course in the first year of the high school will find two papers in favor of such a course in the November issue of *School Science and Mathematics;* one paper by F. G. Masters and one by Lewis B. Avery.

The remarkable expansion of French control in Northwest Africa is not generally understood. France has acquired in Africa an area not much smaller than the United States, and "is turning a desert into a dominion." E. Alexander Powell has an illustrated article on this subject in the *Outlook* of October 28.

In the same number of the *Outlook* is an article by William T. Ellis on "China in Revolution," and an excellent editorial on "China for the Chinese." History is making rapidly in China and geography teachers should keep themselves and their classes in touch with the changes that are going on.

In the *World's Work* for November, M. O. Leighton, Chief Hydrographer of the U. S. Geological Survey, writes of the nearly eighty million acres of swamp land in the United States, much of which can be reclaimed by draining. A map showing the amount of such land in each state accompanies the article.

In the same magazine, Jas. B. Weaver, Jr., discusses the agricultural conditions in Iowa. This is our most typical farming state. The article is a good one for eastern pupils (and teachers) to read.

Teachers who are interested in the Holy Land will enjoy Lewis G. Leary's article in *Scribner's* for November, on "Going down from Jerusalem to Jericho." The author describes how one goes and the people that one meets on the way. In the same magazine, Ralph D. Paine writes on "The Port of London River." Both articles are illustrated.

Wm. T. Ellis's paper on "Speeding the Pilgrims to Mecca" in *Harper's Magazine* for November gives the reader a good idea of the Mohammedan pilgrimages.

PRODUCTION AND EXPORTATION OF TURPENTINE.—The yearly production of turpentine in the United States is approximately thirty-seven million gallons, valued at fourteen million dollars, and one-half of this production finds its way to foreign countries.

The turpentine-producing area of the United States is practically confined to the coastal plains region of the Southern States. In the earlier days the industry was best developed in North Carolina, but owing to the destructive methods of turpentine orcharding, in conjunction with lumbering, fires, etc., the industry has gradually worked southward and westward, until at present Florida produces the most turpentine, followed by Georgia, Alabama, Mississippi, Louisiana, North Carolina, South Carolina and Texas, in the order named.

The production in the last forty years has risen from six million gallons valued at somewhat over two million dollars to thirty-seven million gallons valued at fourteen million dollars. The greatest strides in production were made prior to 1900, since which time the output has been practically stationary.

POPULATION OF THE UNITED STATES PER SQUARE MILE, BY STATES

STATE.	1910	1900	1890	STATE.	1910	1900	1890
Rhode Island ...	508.5	400.7	323.8	Mississippi	38.8	33.5	27.8
Massachusetts ..	418.8	349.0	278.5	Louisiana	36.5	30.4	24.6
New Jersey	337.7	250.7	192.3	Arkansas	30.0	25.0	21.5
Connecticut	231.3	188.5	154.8	Minnesota	25.7	21.7	16.2
New York	191.2	152.5	126.0	Maine	24.8	23.2	22.1
Pennsylvania ...	171.0	140.6	117.3	Oklahoma	23.9	11.4	3.7
Maryland	130.3	119.5	104.9	Kansas	20.7	18.0	17.5
Ohio	117.0	102.1	90.1	Washington	17.1	7.8	5.3
Delaware	103.0	94.0	85.8	Nebraska	15.5	13.9	13.8
Illinois	100.7	86.1	68.3	California	15.2	9.5	7.8
Indiana	75.3	70.1	61.1	Texas	14.8	11.6	8.5
Kentucky	57.0	53.4	46.3	Florida	13.7	9.6	7.1
Tennessee	52.4	48.5	42.4	North Dakota...	8.2	4.6	2.7
Virginia	51.2	46.1	41.1	Colorado	7.7	5.2	4.0
West Virginia ...	50.8	40.0	31.8	South Dakota....	7.6	5.2	4.5
South Carolina..	49.7	44.0	37.8	Oregon	7.0	4.3	3.3
Michigan	48.9	42.1	36.4	Utah	4.5	3.4	2.6
Missouri	47.9	45.2	39.0	Idaho	3.9	1.9	1.1
New Hampshire.	47.7	45.6	41.7	New Mexico.....	2.7	1.6	1.3
North Carolina..	45.3	38.9	33.2	Montana	2.6	1.7	1.0
Georgia	44.4	37.7	31.3	Arizona	1.8	1.1	0.8
Wisconsin	42.2	37.4	30.7	Wyoming	1.5	1.0	0.6
Alabama	41.7	35.7	29.5	Nevada	0.7	0.4	0.4
Iowa	40.0	40.2	34.4				
Vermont	39.0	37.7	36.4	Dist. of Col.....	5,517.8	4,645.3	3,839.9
				UNITED STATES...	30.9	25.6	21.2